

## First record of *Hyssopus pallidus* (Askew, 1964) for Switzerland (Hymenoptera: Eulophidae)

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**First record of *Hyssopus pallidus* (Askew, 1964) for Switzerland (Hymenoptera: Eulophidae).** - The parasitoids emerged from apples that were collected in orchards in the cantons of Aargau and Zurich and were brought into the laboratory. They were found to have developed on both known hosts, i.e. *Cydia pomonella* (L., 1758) and *Cydia molesta* (Busck, 1916) (Lepidoptera: Tortricidae).

**Keywords:** Parasitoid - *Hyssopus pallidus* - *Cydia pomonella* - *Cydia molesta* - first record - Switzerland.

*Hyssopus pallidus* (Askew, 1964) is a gregarious, idiobiont ectoparasitoid of late larval instars of the codling moth, *Cydia pomonella* (L., 1758), a widely distributed major fruit pest, and of the Oriental fruit moth, *Cydia (Grapholita) molesta* (Busck, 1916), an economically important pest of stone fruit orchards and in a rapidly expanding area also of apple orchards (reviewed by Natale *et al.*, 2003). In apple orchards under integrated and organic regimes augmentative release of this parasitoid could substitute the labor intensive and therefore costly post-harvest fruit removal (sanitation) often needed to lower codling moth populations to a level that allows the successful employment of the mating disruption technique (Mattiacci *et al.*, 1999). The behavioral ecology of this species is being studied at our institute (Gandolfi *et al.*, 2003; Mattiacci *et al.*, 1999; Mattiacci *et al.*, 2000) and it is thus with great interest that we take note of its presence here in Switzerland.

The species was first described by Askew (1964) as *Elachertus pallidus* from Castagniers (Alpes Maritimes), France, and from Sofia, Bulgaria, and was then transferred to the genus *Hyssopus* by LaSalle and Huang (1994). Morphology and development of its immature stages were described by Tschudi-Rein and Dorn (2001).

A total of 26 male and 78 female *H. pallidus* emerged in July and August in the laboratory from apples collected between June and August 2003 in three apple orchards in Northern Switzerland: Endingen (395 m a.s.l., N 47° 31' 46.7"/ E 8° 17' 1.6") and Schlatt b. Leuggern (436 m a.s.l., N 47° 33' 40.5"/ E 8° 13' 20.7") in the canton of Aargau and Steinmaur (442 m a.s.l., N 47° 29' 34.1"/ E 8° 26' 44.1") in the canton of Zurich. Apples lying on the ground in the field with indications of infestation by *Cydia* species had been collected and brought to the laboratory for an ongoing

behavioral study of the codling moth. Upon detection of the emerging parasitoids, more apples were collected and these were kept singly in containers. This allowed the tracing of emerging parasitoids back to their host larva in the apple. The host larvae were identified with the help of larval keys of Brown (1987) and of Pfeiffer (no date). Male and female *H. pallidus* were collected from all the 3 orchards from which apples had been collected, and from their two known hosts, *Cydia pomonella* and *Cydia molesta*. This latter host species was found as a parasitized larva in an apple from the orchard in Schlatt b. Leuggern in the canton of Aargau.

Voucher specimens have been deposited in the Natural History Museum Geneva.

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